Divergences on the Left: The Environmentalisms of Rachel Carson and Murray Bookchin

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In 1962 the coincident publication of *Silent Spring* and *Our Synthetic Environment* brought difficult issues of pollution and health to the attention of the American public. The two authors, Rachel Carson and Murray Bookchin, conducted their research independently, focused on different problems, and employed distinctive rhetorical styles. Separately they synthesized political and scientific arguments into new avenues of inquiry that are now commonly understood as the intellectual underpinning for the environmental movement. Like any new formulation, environmentalism is difficult to categorize, and as it was created and practiced in the 1960s it took many forms, most of which can be categorized as left of centre in the American political tradition, and some of which were radically leftist.

Despite the coincident timing of their publications, Carson and Bookchin's distinct intellectual influences and divergent environmentalisms are striking. Carson's *Silent Spring*, which also appeared in serialized form in *The New Yorker*, was an overnight popular success. Through her work Carson created a new understanding of the terms of environmentalism and a broader public awareness of its tenets. Bookchin's *Our Synthetic Environment*, however, reached a far smaller audience. Although the authors shared a concern for the effects of toxic chemicals and sought to inform the public about these matters, differences between them are more noteworthy than are the similarities. Indeed, each text derived from a distinct intellectual tradition, from which it crafted its own specific brand of environmentalism and leftist thought in the 1960s.[1] While scholars commonly accept *Silent Spring* as *the* text that began the environmental movement (as distinct from conservationism or the wilderness movements), Bookchin's work created much less public awareness or controversy.[2] He therefore receives substantially less credit from scholars for his role in creating environmentalism and influencing its development during the 1960s.[3] These divergent outcomes were the result of almost entirely different research strategies, intellectual heritages, and rhetorical devices.

Carson's formulation, including her assumptions, research methods, and findings, were reformist: working with a body of scientific evidence she appealed to the public to call for federal policy change. In the context of the Cold War, her faith in science and the reformist impulse was progressive, the sort of politics that the United States Congress might, and eventually did, embrace. She accomplished this in part by deploying familiar ideals and tropes from American literature and history.[4] Bookchin's ideas were more diversely rooted and explicated. Indebted as

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he was to the urbanism of Mumford and the critical theory of the Frankfurt school, his work was attuned to a broad spectrum of environmental threats and pointed to a potentially radical indictment of technological urbanism, although at this early date his anarchism had not yet fully emerged. The technological urbanism of Mumford provided Bookchin an exit from some apparent conflicts between Marxism and nature. In Bookchin's personal journey, *Our Synthetic Environment* became a scientific bridge to a new theoretical framework, or even a point of conversion from his early days of Communism and Trotskyism to his later work in anarchism and social ecology. Carson and Bookchin's distinct methods and findings mean that in far-reaching historical terms each author established their own legacy. Thus within environmentalism there are clear indications of divergences on the left in 1962, which are reflected in Carson and Bookchin's distinct legacies. Carson persuaded the public within the confines of the centre-left of the American political tradition; Bookchin established the framework from which radical environmentalism evolved along with the New Left in the middle to later 1960s.

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Historians have written much about Rachel Carson as the founder of environmentalism, but rarely have they moved beyond the discussion of her biography, her status as the first environmentalist, and her role in making public the dangers of DDT. They have offered surprisingly little analysis of her prose, rhetoric, and the intellectual tradition behind her work. Yet it was her rhetorical strategies that ultimately allowed her to undermine the structure of scientific research and impart to the reader a very particular sense of "the environment," a meaning that eventually became the standard for environmental discourse and for the political movements built upon environmental ideals.[5] Carson's singular prose made possible her original contribution to environmentalism. She drew upon a number of historical tropes, including nationalism, pastoral nature writing, religion, and even militarism and anti-corporate populism.[6]

Silent Spring was an expression of populism and nationalism, one that persuaded readers by enveloping them in the romanticism of America's mythic past while offering simultaneously a prescription for public improvement. Carson relied heavily upon appeals to the American public, which she won over to her cause by referring repeatedly to historically fantastic notions of the American West and its awesome, rugged landscape. This nostalgic rhetoric recalled the poetic beauty and pastoralism of nineteenth-century literature, from Jefferson's *Notes on the State of Virginia* to Thoreau's *Walden*. She structured her text around a natural image that was familiar to the public: the frontier, idyllic nature devoid of human interference. In short, she offered the mythic frontier imagined by historian Frederick Jackson Turner. Carson turned to metaphor as well, invoking references

to well-known myths, nursery rhymes, and canonical elements of Christian knowledge. She imparted a highly democratic sense of audience, directly addressing the "public" and the "consumer." Throughout, she skilfully appealed to the American ideal of democracy and to an American public whose self-image she presented as complex and rooted in a tradition that was conservationist and reverential towards its heritage, but never deeply opposed to market consumerism, corporate capitalism, or the liberal political tradition in America. Her biographer argues that Carson's success at building environmentalism relied upon nature and aesthetics more than it relied on science, thereby capturing the public interest and trust.[7]

At the heart of Carson's nationalist rhetoric was her invocation of the pastoral tradition. This tactic is strikingly reminiscent of Jefferson's approach in *Notes on the State of Virginia*, a complicated text that moves effortlessly between romanticism and political philosophy.[8] Henry Nash Smith's analysis of Thomas Jefferson illuminates the origins of Carson's naturalist themes.[9] Smith noted that Jefferson did not believe that the agrarian ideal and the yeoman farmer would extend to the West beyond the Mississippi because he thought that land would be better preserved for Indians. Jefferson viewed the Lewis and Clark expedition as a scientific priority, but Smith argued that Jefferson also envisioned it in economic terms, identifying an important distinction between the two views. Smith asserted provocatively that the expedition was an enactment of myth, and one in which, along with the subsequent history of the West, has become deeply allegorical in the American mind. Thus it is tempting to look back on it as a visionary, self-consciously mythic moment, part of a pre-ordained destiny. Carson certainly shared this allegorical vision of the West as it came to be known through the exploits of Lewis and Clark, and it was this which contributed to her style and appeal. In the context of the legendary Western frontier she constructed an environment made perfect by nature. She then juxtaposed the sanctity and timelessness of this construction against the opportunistic, of-the-moment, profit motives of the agriculturists. The irony is that Jefferson himself hoped the expedition would expand American opportunities for trade and commerce.

Another nationalist aspect of *Silent Spring* with a strong connection to Jefferson, and to Walt Whitman, occurs in the value she placed upon the American landscape, untainted and poison-free, as a necessary part of American democracy and identity. Indeed, Whitman believed that American society and literature would always be adapted to the North American continent and its geography. In *Leaves of Grass*, Whitman wrote that America "incarnates its geography and natural life in rivers and lakes," as if he sat down to write a preview of Carson.[10] Just as Carson would, Whitman displayed a blend of natural geography and Christianity in his writing, a tendency that leaned towards mysticism.[11] Carson was criticized by the industrialists who organized against *Silent Spring* for being too mystical—but as Linda Lear noted it only contributed to her public appeal.[12]

Carson's America was a poisoned garden. In *Virgin Land*, Smith noted a

paradox surrounding the myth of the Garden. It was essentially a utopian vision of agrarianism where the frontier promised an endless source of agricultural production and expansion; this view has its roots in the book of Genesis. This myth coexisted uneasily with a desert myth, a mistaken belief that the semi-arid regions west of the Mississippi and especially the Rocky Mountains were uninhabitable deserts, offering no agricultural possibilities. Thus a conflict ran throughout the history of the West between the actual and the imagined, resulting, in part, in a constant yearning for an agricultural society that worked in harmony with the geography of North America. Carson's critique of the agriculturists stood out as a reaction against the latest phase in American agricultural development (pesticides, industrialization, the death of the farmer), but her rhetoric was rooted in a mythic, undeveloped West. *Silent Spring* did not allow much middle ground: pesticides were being sprayed on the trail of Lewis and Clark, and these chemical soakings threatened a return to the desert.[13]

Carson's rhetoric nonetheless served two purposes, much as Jefferson's did in *Notes on the State of Virginia*. One finds the "doubleness" of Jefferson in his pastoral ideal. "Doubleness" was another device that supported the romantic vision of America he penned in response to Crèvecœur's queries. But it was also steeped in the visual, objective politics of Locke, a literary device that was a counterpart to Jefferson's agrarian state and yeoman farmer-citizen. A similar duality is evident in *Silent Spring*, as Carson shifted, often within the same paragraph, between appeals to a romantic, mythic vision of the West and nature, and anti-corporate political logic. Jefferson's vision was pragmatic, positivist, and romantic at the same time—and so was Carson's, although her pragmatism focused on a different goal.[14] Jefferson was imagining the future structure of a state; Carson was attempting to re-order the one she lived in.

Carson's resort to pastoral literary devices was central to her public appeal.[15] But even more explicitly, Carson used the term "public" in a variety of contexts. The public interest outweighed those of "the suburbanite," the industrialist and the agribusiness. She used "the public" to win over her audience with a sense of democratic urgency:

> It is the public that is being asked to assume the risks that the insect controllers calculate. The public must decide whether it wishes to continue on the present road, and it can do so only in full possession of the facts.[16]

She declared that the chemical dumping in Clear Lake, California was a situation that "the public needs to face," and everywhere "cancer-producing substances are being introduced into public water supplies." During an unannounced low-fly spraying incident in Detroit, she noted that "worried citizens" flooded the Federal Aviation Agency with phone calls. The FAA authorities referred to these people as "the watchers," while for Carson, these concerned citizens were "the public".[17]

Ultimately the public would respond to these appeals for civic and federal action in order to save the American frontier from the assault of chemical agriculturists.

Two worlds, the natural and the man made, collided at strategic points in Carson's text. She insisted "we were walking in nature like an elephant in a china cabinet" in light of the effects of herbicides on long range vegetation growth patterns.[18] Consider the impact of the following passage:

> this is a problem of ecology, of interrelationships, of interdependence […] the springs are silent of robin song […] these are matters of record, observable, part of the visible world around us. They reflect the web of life—or death—that scientists know as ecology.[19]

The environment was more than just the outdoors of the conservationists, hunters, fishers, and campers, who fashioned themselves after Teddy Roosevelt or John Muir. Conservationists wanted the national parks preserved for their aesthetic, historical and spiritual value; to those reasons environmentalists added the problems of "ecology" and "interrelationships," that were required to maintain a safe and healthy ecosystem.

Complete knowledge of the environment, according to Carson's definition of environmentalism, depended upon scientific knowledge, even if problems of technology derived from science had caused environmental problems. For example, Carson argued "we must be concerned with the delayed effects of absorbing small amounts of pesticides that invisibly contaminate our world."[20] The extent to which pesticides permeated *our world* established, in effect, a boundary around the environment. Agricultural land, rural communities, urban communities, parks, wilderness—all were bound together by their place in the environment. They related to it, it incorporated them, and they all suffered under the chemical assault. This presentation was new to the public and effectively combined ecology with local land use and preservationist issues.

Carson's definition of the environment was broad and dynamic. It was broad in the sense that it was not restricted to regions previously thought to be "natural," such as untamed wilderness; it was dynamic in the sense that it recognized the changing relationships between agriculture and the federal government over time. For example, she wrote: "nature is not so easily molded […] the insects are finding ways to circumvent our chemical attacks on them." She observed that "the balance of nature is not the same today as in Pleistocene times, but it is still there." Consider the importance of the phrase *it is still there*. Nature was resisting modernization. "[T]he balance of nature is not a *status quo*; it is fluid, ever shifting, in a constant state of adjustment," she concluded. Humans modified nature through a variety of interventions; pesticides were so strong and were becoming so widely used that they were dominating the relationship between humans and nature.[21]

In order to evoke the substance and spirit of the environment, Carson had to overcome technical obstacles. The central rhetorical tension in *Silent Spring*

arose from Carson's need to blend popularly understood values with scientific knowledge and jargon. Though trained as a scientist, her audience was the general public. She walked a tightrope, trying to appeal to the sentimentality of the public while at the same time maintaining her authority as a rational scientific researcher. She succeeded in attracting a wide readership because she never relied upon lengthy and potentially boring or indecipherable scientific evidence.

Carson imparted a vast reservoir of scientific knowledge about DDT to her audience. She argued against the unchecked use of synthetic compounds, in particular the widespread and intensive application of inorganic pesticides. She demonstrated how arsenic, Malathion, DDT, dieldrin, and a host of other new chemicals were toxic to the environment and to the humans who were exposed to them. She placed DDT at the top of her toxicity complaints and distinguished it as the compound that posed the greatest potential harm; it was persistent and it spread quickly through water, traveling as a stable compound that did not dissolve or decompose. It was consumed by fish and absorbed by plants and insects. In animals, especially birds and fish, it was stored in the fatty tissue. As it traveled up the food chain, ultimately infecting humans, it was stored in ever-increasing concentrations in living tissue. The higher the concentration, the more toxic it became to the host. DDT, *Silent Spring* explained, caused dead fish to turn up in rivers and lakes polluted by agricultural "drainage," and the birds that fed on fish and insects in sprayed areas suffered an even more dramatic population decline. Dead birds, including the robin and the eagle, eerily provide the "silence" in *Silent Spring*.

In addition to calling attention to particular scientists' research on pesticides, *Silent Spring* exposed to the public a scientific community that was not unified, not serving the public interest, corruptible—but which could be reformed. Carson's vision of science was underpinned ideologically by the positivism of the Progressive era. Science was a human activity that should seek the truth and serve human needs. Her challenge to science was never ideological; rather, she provided a nuanced criticism of how it operated within a positivist framework. She believed that industry dragged science towards profit-making research, in violation of its professional and epistemological interests, and more importantly, in violation of the public interest. Her challenge was reminiscent of Thorstein Veblen, who criticized the increasingly "pecuniary" nature of both business and science.[22] Carson's challenge was internal: she positioned botanists against agricultural researchers. On this point she fell very much within the American enlightenment tradition, in which scientists sought truth by uncovering nature and finding rules and order therein.[23] She criticized science nonetheless for the way in which it occasionally mis-stepped and generated knowledge that was not in the public interest. But this was a problem of organization, not an inherent flaw in scientific inquiry.

For Carson the most controversial aspect of scientific practice was the ongoing "era of specialists, each of whom sees his own problem and is unaware of or intolerant of the larger frame into which it falls."[24] This passage contains two

ideas central to her argument. First, she cast doubt on the "era of specialists" and portrayed the scientific establishment as overcomplicated and out of touch. Second, she presented complicated issues of epistemology as a simple visual metaphor: what one *sees*. This resort to imagery and metaphor allowed her to remain comprehensible to a non-scientific audience. It also rendered the concept of the environment more concrete, something knowable because it could simply be seen. Her alternative vision of epistemology, specialization, and the environment left the reader with a difficult choice: should they believe scientists on faith, or should they follow her presentation of what appeared to be common sense? Ultimately, the scientists' intolerance of the "larger frame," a beautifully abstract phrase that placed nature above scientists, would be their undoing.

Carson's scientists figured as both good and bad, professional and irresponsible, trustworthy and corrupt, heroes and villains. For example, in her discussion of how non-toxic synthetic chemicals could potentially form toxic compounds when mixed haphazardly in nature, she referred to "mingled chemicals that no responsible chemist would think of combining in his laboratory." Irresponsible chemists' actions had unforeseen consequences. She repeatedly raised questions of responsibility, as when she asked "who has made the decision that sets in motion these chains of poisonings […] ?" She cast scientists' interests against her readers' when she demanded "who has the right to decide—for the countless legions of people who were not consulted that the supreme value is a world without insects?" She placed the scientist in a vulnerable but potentially active role when she quoted an entomologist who argued that "humbleness is in order, there is no excuse for scientific conceit here." Irresponsibility and conceit could be overcome—but only in a more socially responsible research setting that sought to study nature in the field, outside of research institutions.[25]

On the other hand, Carson acknowledged those scientists already following the path she recommended, including the American Society of Ichthyologists and Herpetologists, a group she deemed a "venerable scientific organization." Additionally, responsible scientists were precisely the people best trained to address environmental questions. Indeed, "all of these questions urgently require the precise answers that only extensive research can provide" through "*constructive* research." Carson's text creates a clear split between the constructive and the irresponsible, the corrupt and the proper, usually along lines of specialization. Essentially, all agricultural work, which sometimes included entomology, was suspect, while biological and botanical work, along with wildlife studies, showed promise.[26]

The chemical industry was not the only evil in the scientific community, but Carson cast its failings in light of other ongoing problems in the public image of science, such as the well-publicized divide between nuclear scientists. Carson developed comparisons between toxic chemicals and radiation, as when she argued "anything—human or non-human—within range of the *chemical fallout* may know the sinister touch of poison." Environmental health problems were due in part to

"radiation in all its forms" and "the parallel between chemicals and radiation is exact and inescapable" due to the nature of the cell damage that both caused. She used studies of Hiroshima survivors to establish her argument that it could take a number of years before problems like cancer and leukemia developed from exposure. By associating pesticides with nuclear science and the spectre of Armageddon, she built a more visually powerful environmental argument.[27] Comparing pesticide and ecological research to atomic research, she demonstrated a professional, specialization-based divide over the merits of synthetic chemicals. In the nuclear industry, scientists divided themselves over issues of morality and national policy; Carson's specialists split more rigidly along professional lines.[28]

Silent Spring constructed an environmentalist spirit which achieved broad public acceptance and cast a shadow over the professional organization of science. Working within that shadow, Carson created a new sense of environmentalism, rooted in the Progressive era tradition of public responsibility and a Jeffersonian notion of the purity of the American republic. Politically and intellectually, however, much of her text was not new. It relied upon the Cold War era's positivist position on science, and a progressive era anti-corporate slant reminiscent of the days of trust-busting and muckraking. It is reasonable to speculate that she developed this distrust of corporate practice while working for the federal government in regulatory and quasi-regulatory positions, with the Fish and Wildlife and other related services, from 1939 through the late 1950s. However, according to Lear's definitive biography, she had no history of strongly anti-corporate political writing. It seems most likely that her DDT findings, in conjunction with her regulatory experience, drove her to these conclusions.[29]

Carson's fury at the Department of Agriculture and the industries it supported appears prominently in *Silent Spring*. In her text the chemists, engineers, and managers of the chemical industry were guilty of gross mismanagement and dishonesty. She referred to them pejoratively and collectively as "agriculturists," impugning their motives on nearly every page, portraying them as a monolithic group of mutually supporting researchers, interested only in profits and the growth of industrial agriculture. Moreover, Carson attacked industry for its greed and disregard for the environment, engineers and managers for their lack of vision and understanding, and the United States Department of Agriculture (USDA) for its complicity in these matters, rejecting completely, for instance, the USDA's support of mono-cropping.[30] As she developed her argument, Carson became more vehement in her negative characterizations of the business side of chemical spraying. She referred quite dismissively to the "zealous chemical salesman" and described a brown roadside that had been sprayed as "a sight to be endured with one's mind closed to thoughts of the sterile and hideous world we are letting our technicians make." Her indignant language, however, fell short of any sort of structural, comprehensive theory on corporatism or radical action.[31]

In addition to complicity with corporate driven research, Carson castigat-

ed the USDA for its overall approach, which encouraged environmental poisoning in other ways, often through inaction. She cast the agency in an inactive, incompetent, and lazy role, as when "state and federal agriculture officials characteristically shrugged off individual complaints as unimportant." She pointed out how beekeepers in New York had lost faith in DDT and the USDA, and that the gypsy moth spraying programs "were marked by many acts of irresponsibility." Her analysis of the fire ant was particularly telling: she argued that there was no great danger posed by the ant, and that the USDA only took note of the "problem" after "the development of chemicals of broad lethal powers." Noting how a trade journal "cheerfully" credited USDA pest-elimination programs with creating a "pesticide sales bonanza," Carson also pointed out that the USDA was also guilty of publishing "propaganda," such as a USDA film for presenting "horror scenes that were built around the fire ant's sting." The research tactics of corporate science gave way to a policy of non-investigation of potentially harmful chemical products.[32]

Despite that harsh tone, when today's readers return to Carson's text seeking insight or inspiration, they might be surprised by the many topics she neglected. Environmentalists and leftists alike may react with dismay, for example, when they discover she offered no objection to animal testing, a component of DDT research. Nor did Carson call for radical changes in capitalism or consumerism. Her ominous language and condemnation of corporate practice never ultimately became a call for radical political change—only incremental, federal reform. Her nationalist rhetoric pounded her audience with the bigger subject of her work, the enduring American project.

Carson's America was double: a mythic Jeffersonian garden not yet fully destroyed by pesticides, and, an agricultural-corporate complex, composed of over-funded and under-regulated "zealots" promoting poisons for profit. Science was not evil, nor were pesticides themselves—but it was rather the "agriculturists" who promoted unregulated toxicity in the garden that were dishonest. The American public, armed with the latest research, could stop them in the public commons. Carson's reformism was thus optimistic, displaying a strong faith in secularism and a consensus-era public view of American traditions. Her contribution created a new public view of pesticides which allowed later environmentalists to take up more radical or all encompassing positions on animals, consumer waste, water quality, air quality, and other related issues. In that sense, *Silent Spring* was a leftist treatise, but not one with an intellectual legacy that could be traced directly.[33]

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Carson's environmentalism, as we have seen, relied upon a complex mixture of political tradition and scientific critique. While she believed that cleaning up pesticides was a public problem, her environmentalism did not arise from public

analysis, but rather from scientific analysis and a deeper understanding of ecology and nature, all of which she promoted through a naturalist rhetorical style. Murray Bookchin took a different approach, even though he would agree with Carson about the totality of the natural ecosystem. Published in 1962, Bookchin's *Our Synthetic Environment* was an environmentalist treatise that took up a wide array of technological, urban, agricultural, and health issues, in addition to addressing pesticides. While Carson's work reflected dominant American literary traditions fused with left-leaning progressive political principles, Bookchin took his inspiration from the urban, social, and political analysis of Lewis Mumford.[34] Carson criticized specialized agricultural science, and her work relied upon a selected reading of other specialties. Bookchin surveyed a wider body of scientific literature and refused to rely upon a single research area. He studied results from expert research in soil science, agriculture, medicine, pharmacy, chemistry, radioactivity, urban planning and other fields.

Bookchin's object was also much less single minded than Carson's, whose emphasis remained almost exclusively on the impacts of DDT.[35] *Our Synthetic Environment* was a treatise on human health and the environment, the intimate connections between the two, and how they could be identified and resolved through a close examination of the complex, technological, and modern urban environment. Bookchin had not yet written his works in radical social ecology, but the politics displayed in *Our Synthetic Environment* were critical of nearly every social and political convention that maintained an unhealthy status quo in industry, agriculture, urban life, or human environments.[36] He wrote *Our Synthetic Environment* to promote health education and social action, while Carson called for public inquiries into pesticides and increased federal scrutiny and regulation.

Bookchin's work was particularly indebted to Lewis Mumford's *The Culture of Cities.*[37] Mumford was prolific and at times difficult to disentangle, but his urban and social analysis usually displayed anti-modern, Emersonian, and "organismic" worldviews. He feared the social effects of technology, the sprawl and mechanization of cities, the rapid blending of new technology and culture. To encapsulate the dynamics of modern society he coined the phrase "the mega-machine," and then railed against its attributes and effects. Mumford and Bookchin both admired Thorstein Veblen and as such their political philosophy in totality was neither Marxist nor Progressive. Mumford feared, ultimately, that the mega-machine would take over the landscape. Cities would grow and replicate beyond the point which they served human and, though he did not use the exact word, *ecological* needs; they would begin to harm human ecology instead.[38] In *Our Synthetic Environment*, Bookchin expanded upon each of these themes from *The Culture of Cities*, although he avoided the darkly pessimistic and eccentric notes, exchanging them for detailed explanations of the latest scientific research and inquiries into human health. He focused on the social and environmental problems of urbanity, especially human health and food production. Using his encom-

passing synthesis of scientific research as a launching pad, Bookchin created an environmental critique of the modern city and mass culture—but he also offered correctives.

Bookchin's environmentalism derived from his concept of human ecology, which was a function of human health and "man's" relationship to nature. Each of those, he argued, was seriously degraded by modern life. Human health was a problem because medicine was fixated solely on curing the sick, a practice which produced results in curing diseases but did not produce otherwise healthy people. In fact, the synthetic urban environment had become so over-constructed medically that most people could not survive outside of a "pharmaceutical hothouse." Survivability was a key indicator of progress to many, but Bookchin noted that life expectancy only increased in the twentieth century due to the elimination of childhood diseases. Adults could not expect to live much longer than before.[39] In other words, medicine's obsession with diseases and cures, especially cancer, resulted in a failure to measure or study health—indeed, there was no real working definition of it.

Bookchin argued that the deleterious effects of urban life were so obvious that they were often ignored as part of everyday life. Urban dwellers suffered from chronic fatigue, pains, listlessness, and recurring ailments, but such people were not actually "sick," as with a disease or cancer. These ailments were due to the physical stresses of urban life, but also the chemical and air pollution and general living conditions, including housing and food supply. The problem was that society was adapting to and accommodating this lifestyle, to the point where chronic fatigue, coughing or even obesity were not considered problems but rather features of normal life. Thus Bookchin sought to re-orient the public view of health by revealing how medicine had failed to keep pace with the impact of synthetic substances on the body.[40]

Bookchin maintained that public health depended upon nutrition and the types of food available to the residents of mass society. The mass production of processed food in millions of units meant that decisions about what types of food to produce and the acceptability of additives were made elsewhere, non-locally. Additionally, the impurity of food, water, and air combined to degrade human health, as when Bookchin wrote "to speak of an environmental 'influence' on health is an understatement; there is a distinct environmental and social dimension to every aspect of human biology […] it is here that we encounter the limits of the individual to attain health on his own."[41] Moreover, even rural dwellers, who might escape smog or food additives, were subjected to the harmful effects of massive agricultural pesticide spraying—and were therefore interconnected with the culture of cities through the necessity of industrial agriculture. Thus, the ecological relationship between the individual and the metropolis was central to Bookchin's environmentalism.

Bookchin featured environmentalism heavily in his text, but it was not

the same sort of environmentalism displayed by Carson. "Urban decentralization underlies any hope of achieving ecological control of pest infestations in agriculture," he argued.[42] This was a significant distinction from Carson, who asked the public to question the validity of agricultural research, and to support a new regulatory regime against synthetic pesticides. Bookchin framed the problem in the language of urban and economic development. Massive cities required massive agriculture, both of which were detrimental to human health and social relations. One could not escape the metropolis by moving to the country, nor could the country be corrected (as in the elimination of synthetic pesticides and industrial farming) as long as the city remained unchanged. The metropolis demanded that the city and country remain dependent upon each other. His environmentalism argued that both city and country needed reform in order to improve individual human health everywhere. He called the process human ecology, which was the starting point for his subsequent, and more well known, writings on social ecology.

Bookchin also took a strong position against pesticides, including DDT, in his discussions of environment and ecology. His treatment bore some superficial resemblance to Carson. For example, Bookchin argued "it is doubtful whether any part of the United States with some kind of vegetation useful to man has not been treated at least once in the past ten years."[43] However, his DDT chapter differed from *Silent Spring* stylistically and substantially. In *Our Synthetic Environment* Bookchin explained his argument patiently; he did not resort to literary imagery or metaphor, instead he used determined, plodding prose that grappled with the detailed science of pesticides. His critique of DDT was more of a socio-scientific study than a populist warning. Agricultural process, which he defined in terms of mechanization, farm size, and "simplification," caused the problems. Pesticides simplified the environment by promoting mono cropping and the elimination of weeds, insects, and animal pests. This method contributed, ultimately, to a decline in soil depth and quality and poisoned the human environment with persistent, carcinogenic compounds. He called for more complex, organic methods, inverting the conventional wisdom that technology was more complicated than nature. This was a far cry from Carson's "sinister" agriculturists, whose pecuniary motives contributed to "chemical drenchings." Bookchin took aim at the historical development of agriculture, noting that it should not resemble industry, either in its methods or in its "bigness" (a comment that echoed Mumford's distaste for "giantism"). Agriculture was a human process that depended upon the farmer's "intimate" knowledge of soil, the interaction between crops and non-crops, and the management of organic pest controlling animals and insects. Such intimacy was not possible in farms larger than 300 acres. Agriculture should never have reached the point where food crops were mass-manufactured. This was another harmful legacy of the metropolis, and the urban mass culture's demand for heavily standardized, chemically supported, and processed foods.[44]

Bookchin engaged science as a resource and considered it a valuable

asset; he did not attack science structurally. Even though the public was moving from faith to ambivalence with respect to Cold War science—a trend which Carson was exploiting—Bookchin noted the social improvements that might result from engaging scientific positivism. He commented scathingly on decisions made in agriculture, the chemical industry and food processing, but he questioned each first as a social structure that promoted bad health, and second as a problem created by science. The issue of synthetic chemicals in our environment resulted in part from the role played by science in supporting food production, but only through science could these problems be discovered, explained, and solved. Indeed, Bookchin took great pains to note that he was not a "primitivist," anti-modernist, or any other sort of back-to-nature philosopher.[45] Here we see the beginnings of his revolt against the romanticism of American transcendentalist tradition, and its influence on the history of environmentalism.

Science was most important to Bookchin for its newly discovered understanding of ecology. Science did not cause the toxic nature of modern life; even specialization, which he considered a problem, did not bear the brunt of the responsibility. Too much useful science had been ignored. Bookchin pointed to research in ecology that showed the long-term breakdown and erosion of soil, the decline of microbes and useful insects and animals (otherwise known as "pests"), and an overall increase in the level of metals, radioactive isotopes, and pesticides found in humans. Indeed, most of *Our Synthetic Environment* is a synopsis of what Bookchin considered "useful" science.[46] In this way both Carson and Bookchin were derivative, relying upon scientific expertise in order to promote their own new visions of ecology and environmentalism.

While Carson used nuclear fallout as a metaphor for the dangers of pesticides, Bookchin confronted the problem of radiation in society directly. In fact, he featured radiation and "strontium-90" more prominently than any other subject. In order to explain the particular problem of radiation and its unimaginably long half-life, Bookchin resorted to a rigorous science lesson: "it will be useful to review briefly some elementary concepts of atomic physics." Such passages may not have been page turners, but each chapter of *Our Synthetic Environment* contained similar digressions. The lesson continued for a dozen or more pages, and ended with descriptions of how radiation led to cancer and leukemia.[47] Carson used nuclear radiation as a device to show divisions within science; Bookchin wielded it as yet another tool for dissecting the impact of the urban machine on human health. His anti-nuclear, anti-radiation stance fit within a surge of similar public sentiment. He delivered his diagnosis, however, via a lengthy and strangely unemotional lecture on the detailed workings of radiation.

Bookchin chose not to attack science in order to win the reader over to the rationality of his argument. He embraced the conventional belief in the rationality and neutrality of science, and, oddly, aligned himself with Cold War positivism in this respect.[48] Without resorting to the cathartic imagery and natural-

ism of Carson, Bookchin would have had a difficult time mounting an attack on science or its methods; moreover, it was beyond his scope. More significantly, it did not follow from *The Culture of Cities*' theory of the metropolis. Environmental problems were due to social conditions and stresses that had emerged in the metropolis due to a long historical period of economic and physical growth. Understanding the metropolis and the human ecology within it, and solving the problems arising from both, was a matter for science. While science may have played a role in promoting the problems of the synthetic modern world, its negative connotations were less significant than its potential for identifying and correcting the human environment.

The politics evident in *Our Synthetic Environment* were never anti-science or directly anti-capitalist. The long-term implications of his environmental critique would certainly weigh on capitalism eventually, but in contrast to his later works in social ecology and anarchism, *Our Synthetic Environment* was modest and even restrained—politically. It certainly offered an imaginative analysis of the problems in the mass culture metropolis, but nothing in the book was explicitly radical politically, except that it placed human health and environmentalist concerns above all others. Indeed, Bookchin made no references to radicalism, socialism, communism, Marxism, or anarchism. The only hint of this type of language was a brief foray into "social medicine," but in this case Bookchin was merely referring to the need to redefine the terms of health and illness.[49]

Bookchin explained the problem of the modern industrial metropolis and rejected it as a model for human health. But that rejection was forward-looking, not part of an attempt to cling to, or return to, a mythic past. He asserted that his "emphasis on agriculture and urban regulation should not be seen as a return to the past, but rather, *a form of modernism*; the future." His form of modernism was technological and social; he sought a reorganization of human relationships with nature. Environmentalism shaped Bookchin's determined political vision of a modernist future, where science and medicine would finally provide the individual with a healthy ecology. This vision would, over the next two decades, expand and mature into *Ecology of Freedom*.[50]

Bookchin's disdain for all things synthetic was a powerful environmental statement, and yet his faith in technology remained and presented something of a contradiction. But it was easily resolved in the social realm. Technology was a neutral tool; it should be put to proper human and social uses. He argued that synthetic chemicals had a social defect—simply by using them society built up a dependence upon them for basic needs. Use created necessity, and chemicals further mechanized and dehumanized food producing processes. He wrote:

> in time chemicals are turned from mere adjuncts of food production into 'technological necessities.' Their use may result in new machines and facilities, the abandonment of old processing methods, and a

> broad reorientation of technology to meet the new chemical requirements.[51]

In this way his critique gave tremendous weight to the agency of the machine-like social and economic processes of the metropolis. Those processes produced a human ecology steeped in synthetic chemicals. The historical development of the metropolis produced an unhealthy human ecology, which could only be undone by challenging the unprecedented levels of synthetic toxins encountered in everyday life.

In addition to "the mega machine," Bookchin expanded upon Lewis Mumford's "defacement of nature" critique of the metropolis and adhered to his historical and sociological theories as presented in *The Culture of Cities*. Mumford's city was a cruel, dark place that, due to economic pressures and historic growth patterns, offered too little nature to the proletariat recruited to work in the metropolis. Bookchin argued that the city and country were interrelated components of the metropolis, and that the country no longer held any monopolistic claims on clean air and water. Pesticide poisoning and soil erosion caused by agriculture geared to produce food as if it were a consumer good built in a factory carried the problem beyond the city. The metropolis, as a result, was a historical development predicated upon a poor understanding of human ecology and an irrational faith in the ability of purely economic forces to shape society. Bookchin's *Our Synthetic Environment* environmentalism derived from his reading and extrapolation of Mumford. The fundamental problem was the omnipresence of synthetic compounds that were increasingly found in the bloodstream of most humans, a fact verified by the science Bookchin surveyed.[52] Humans had become biologically bound to the chemical ecology of the metropolitan machine.

Carson's tragic and untimely death in 1964 meant that she would not experience the tumultuous political changes that transpired in the later 1960s. Bookchin continued to write and research, though he quickly moved away from the dry urban scientism of *Our Synthetic Environment* and into radical political thought and theory. Bookchin began "Ecology and Revolutionary Thought" by echoing his findings in *Our Synthetic Environment*.[53] Modern society was too urban, too layered with concrete, steel and glass, and synthetic chemicals. Mass society was deadening, but merely pointing that out was no longer sufficient to his cause, so after 1965 he promoted alternative solutions and a political theory suited to them: "social ecology" and anarchism. In this early stage of his theory, anarchism stood for decentralization, humanism, and ecologically healthy living. In purely political or historical terms, one might find this description of anarchism rather underdeveloped. But he was nonetheless invoking it to support and expand upon his urban environmentalist ideas. Thus anarchism became a positive—more "libertarian," more human, more free, and more ecological than existing political structures—rather than merely a device for critiquing the power of the state or

other hegemonic entities.

Having eased into anarchist theory, Bookchin addressed Marxism in May of 1965 when he wrote "Towards a Liberatory Technology."[54] He argued that Marxism would forever be coloured by the technological and economic reality of the nineteenth century, and therefore had lost its applicability. A potentially liberating series of technological advances promised human freedom from want and work: "So obvious is this fact to millions of people in the United States and Europe that it no longer requires elaborate explanations or theoretical exegesis."[55] Then, at length, he described technological exotica that might accommodate human scaled, ecological, and local production, including a small scale steel manufacturing process, and even an early version of the desktop personal computer. He praised Spanish and French anarchists glowingly, and used their success as a model for how to get "from here to there" in the United States. Calling for an end to class rule, state rule, and propertied society, he also warned against revolution by "social philistines who are hypnotized by the trappings of authority and power."[56] Ecology and anarchism would be achieved by local meetings in auditoriums, courtyards, parks, churches, or anywhere that "de-massification" might occur.[57]

Bookchin more fully developed these themes in "Post-Scarcity Anarchism" in 1967.[58] This article demonstrated Bookchin's progression from urban theorist to ecologist to anarchist. As it had for Mumford, urban theory allowed Bookchin to understand the dynamics of modern American life. But Mumford's disdain for the city was backward-looking and pastoral, whereas Bookchin's understanding of the city led him to ecology and a political theory for change. His theory bound together social ecology, humanity, human scaled interactions, technology, and freedom. Anarchism would reorient those relationships without necessitating a resort to Marxism or notions of a Marxist revolution, and would fulfill, ultimately, Bookchin's goal of ecological humanism and freedom. In fact, by 1969 Bookchin was openly hostile to Marxism, calling it "shit" in "Listen, Marxist!"[59] By this point he was clearly demarcating his anarchism as ecological and arguing that it should be central to the ideology of the New Left. These later writings forcefully asserted that the Marxism and revolutionary fervour of the 1930s Old Left was counter-productive, outdated and, most importantly, not ecological.[60]

* * * *

In 1962, Carson and Bookchin contributed to a new understanding of the environment that would ultimately lead to a mass movement known as environmentalism. They each did so in their own ways. Carson drew upon proven literary styles and revered the beauty of nature in all of its manifestations, ultimately adopting a populist and progressive pose. Bookchin played the role of visionary sociologist, putting modern urban life into historical perspective and emphasizing health and

ecology as ultimate solutions to the problems of the synthetic metropolis. Carson resorted to epic American pastoral imagery in order to convince the public of the singular and serious danger of pesticide poisoning; Bookchin adopted a social-scientific style, determined and sometimes laborious, in order to educate the individual on many different matters of ecology.

Silent Spring caught the public's imagination in 1962 because of its vision of nature and the American landscape. Pesticides poisoned sacred, national soil and this provided Carson a captive audience—it would not have mattered if her book had been about something other than DDT, as long as scientific research supported her claims and the object of injury was the historic, timeless beauty of the American landscape. The spirit of Carson's environmentalism would linger in the public mind in two forms: an appreciation for the inter-relatedness of ecosystems (ecology) which derived from Carson's effective use and explication of scientific research, and the imaginative reminder that America's beautiful, natural, sometimes rugged and sometimes lush, landscape had given rise to a distinctive democracy, one that must always adhere to the limits and warning of nature.

Carson challenged science, adding significantly to public ambivalence over the social effects of Cold War positivism. Her attack was a mixture of anti-corporate populism and a professional revulsion for the extremes of specialization within science. In this way her politics and environmentalism overlapped. She politicized an apparently scientific problem, and the result of this tactic was leftist despite her otherwise reformist impulse. Her contention that the corporation was guilty of excesses and in need of regulation and reform contributed to the development of the mainstream view that environmentalism was fundamentally related to the economy, and as such any regulations would hurt the corporation's bottom line. She targeted corporations and scientists alike, confident that both could be managed, even though, by her account, they had not been well managed in the past. On this point her legacy is decidedly more murky.[61] By 1971 the Environmental Protection Agency (EPA) was tasked with regulating pesticides (of course DDT was eventually banned) and Nixon was promoting Earth Day. Carson's exact contribution to the New Left is difficult to discern—she engendered awareness and a change in attitude, but her untimely passing meant she would write very little after *Silent Spring*, and the striking singularity of her work produced few if any direct intellectual heirs.

Bookchin, on the other hand, created an environmentalism that was rooted in the urban studies of Mumford and forward looking, even if he experienced difficulties adapting to the politics of the present. He did not cultivate the following that Carson did, perhaps because of his prose style, though Carson's success certainly owed a lot to her notoriety as a nature writer and the popularity of her previous work, especially *The Sea Around Us*. Bookchin's environmentalism was almost unattractively scientific. This is not to suggest that Carson's was unscientific, as the heavily gendered contemporary criticism of her insisted, but rather

that Bookchin's science was a sort of bad medicine. Carson's invocation of myth, the landscape, and the West made her dire news more striking and dramatic and inspired more passion in her readership. Bookchin's scientism contained far fewer literary trappings and as a result was less compelling, but his work was more thoroughly researched. It also led him to a more radical prescription which evolved throughout the sixties.

Carson and Bookchin both contributed to environmentalism in their own way. Today Carson is universally remembered for educating the public on matters of ecology and creating, however belatedly after her publication, a mass environmental movement. Bookchin's writings subsequent to *Our Synthetic Environment* were as prolific as they were controversial. During the formative decade of the 1960s, the politics of *Our Synthetic Environment* contributed to the mass movement as well as to the political fracturing of it, as Bookchin himself became further radicalized by his anarchist thought. In that light, one wonders what Carson would have written had she survived, and what direction her work would have taken. Just what sort of leftward trajectory was suggested in *Silent Spring* is unclear, even if its intellectual significance is not.

NOTES

1 I am examining the intellectual origins of the environmental movement of the 1960s, beginning in 1962. This article is derived in part, but not entirely, from a chapter in my Ph.D. dissertation. Peter A. McCord, "Green Ideas, Green Vietnam: Environmentalism in the Sixties" (Ph.D. diss., University of California, Riverside, 2003).

2 In addition to Robert Gottlieb, *Forcing the Spring* (Washington DC: Island Press, 1993), see Kirkpatrick Sale, *The Green Revolution* (Hill and Wang: New York, 1993); Victor B. Scheffer, *The Shaping of Environmentalism in America* (Seattle: University of Washington Press, 1991); Riley Dunlap and Angela G. Mertig, *American Environmentalism* (Pullman: Taylor & Francis, 1992); and Hal K. Rothman, *The Greening of a Nation?* (New York: Harcourt Brace, 1998).

3 Gottlieb, 86-98. Only Gottlieb gives Bookchin's early 1960s work some attention. Kirkpatrick Sale merely mentions Bookchin as an example of in-fighting between leftists (Sale, *Green*, 64).

4 The most persuasive and comprehensive look at Congressional environmentalism that minimizes the impact of intellectual influences is Paul Charles Milazzo, *Unlikely Environmentalists* (Lawrence, Kansas: University of Kansas Press, 2006). Milazzo takes a dim view of Carson's attitude towards the uses of science (90-91) but rightly credits her with popularizing ecology (94-95). While the effect of Carson's work may have undermined or tapped into the public's "ambivalence" on Cold War science, I maintain that Carson nonetheless promoted positivist, scientific solutions to ecological problems.

5 Howard Brick avoids this tendency, attributing the rise of environmentalism to "many diverse concerns and movements." See Howard Brick, *The Age of Contradiction*

(London: Twain Publishers, 1998), 128. Brick cites Gottlieb (in an *Environmental Review* article that later became part of *Forcing the Spring*), who argued for the diversity of the movement, and yet offered support for the Carson-as-founder argument: "…to a great extent [Carson] was successful in her task [creating a new environmental consciousness]." And yet other scholars, including Linda Lear and Michael B. Smith, believe that Carson's critics experienced success at eroding public confidence in the science of *Silent Spring*. Linda Lear, *Witness for Nature* (New York: Henry Holt and Company, 1997), 428-452. Michael B. Smith, "Silence Ms. Carson! Science, Gender and the Reception of Silent Spring," *Feminist Studies* 27, no. 3, (2001): 733-739. The gendered aspects of Carson's reception are also well documented in Lear's *Witness*.

6 The best in-depth textual analysis of *Silent Spring* is found in Gottlieb, *Forcing*, 81-114. For the definitive biography see Lear, *Witness*.

7 Lear, 408-440.

8 Steven Stoll, *U.S. Environmentalism since 1945* (New York: Bedford, 2007), 6-8. Stoll argues that environmentalism derived from romanticism in American history. In particular, heavily gendered criticism of Carson exploited the notion that her work was too romantic. Carson was many things – a scientist, an activist, a nature writer. Her nature writing did in fact exhibit elements of romanticism as the period is defined by literature, even if such a style in no way reduced the complexity or strength of her argument. Pastoralism is a literary counterpart to agrarianism, although, as Leo Marx has shown, it has origins in literature that pre-date the United States. Leo Marx, *The Machine in the Garden* (London: Oxford University Press, 1964), 73-144.

9 Henry Nash Smith, *Virgin Land* (Cambridge: Harvard University Press, 1975).

10 Henry Nash Smith, 44-45.

11 Henry Nash Smith, 46-47.

12 Lear, 430.

13 Henry Nash Smith, 174-178.

14 For a thorough analysis of Jefferson in these terms see Marx, *Machine*, 96, 117-143.

15 Lear, 430-438.

16 Rachel Carson, *Silent Spring* (New York: Houghton Mifflin Company, 1962), 13.

17 Carson, 49, 50, 89.

18 Carson, 79.

19 Carson, 189.

20 Carson, 188.

21 Carson, 245-246.

22 Brian Lloyd, *Left Out* (London: Johns Hopkins University Press, 1997), 56-65. Lloyd argued that Veblen noted the shift from "industrial" economics, where profit was a signifier of business success and great accomplishment, to "pecuniary" economics, where financial reward was the only and most important motive – an end in itself. Also see Lewis Mumford, *The Culture of Cities* (New York: Harcourt Brace, [1938] 1970), 224-225. Mumford's interpretation of Veblen involved "mechanical and commercial enterprise," instead of "industrial and pecuniary" business.

23 One could argue that Carson shared with Jefferson a deistic vision of science and nature, but that is beyond my scope here.

24 Carson, *Spring*, 13.

25 Carson, 44, 127, 275.

26 Carson, 141, 152 (emphasis added), 189, 200.
27 The lag time between cancer cause and cancer discovery explained in part why Carson's book was not published before 1962. The largest studies of DDT did not begin until 1944, and its harmful health effects did not appear in journals until the 1950s. Specific examples are found in Smith, 39, 61, 61, 156, 188, 208, 209, 212, 226.
28 See Paul Boyer, *By the Bomb's Early Light* (Chapel Hill: University of North Carolina Press, 1994) and Jessica Wang, *American Science in an Age of Anxiety* (Chapel Hill: University of North Carolina Press, 1999).
29 Lear, 110-146.
30 Carson, 10, 13, 64, 68-69.
31 Carson, 71.
32 Carson, 158, 160-164, 171, 264, and 257.
33 I explain the ways in which environmentalism manifests itself in print, poetry and protest throughout the sixties in my dissertation, McCord, "Green Ideas."
34 Mumford even read a draft of *Our Synthetic Environment*. Lewis Herber (Murray Bookchin), *Our Synthetic Environment* (New York: Alfred A. Knopf, 1962), xvii.
35 Those impacts included human health, especially cancer and reproductive health, but *Silent Spring* also emphasized the impact on fish, birds, wildlife, plants, and so on, whose value was intrinsic – not just an indicator or ingredient of human health.
36 For a complete list of Bookchin's publications, see Janet Biehl, *A Bibliography of Published Works by Murray Bookchin in Chronological Order* (Burlington, VT: Social Ecology Project, 1993).
37 Mumford.
38 Here I agree with Andrew Jamison and Ron Eyerman, who explain Mumford in great detail in *Seeds of the Sixties* (London: University of California Press, 1995), 65-88.
39 Bookchin, *Synthetic*, 207-208.
40 Bookchin, *Synthetic*, 195-217.
41 Bookchin, *Synthetic*, 222.
42 Bookchin, *Synthetic*, 240.
43 Bookchin, *Synthetic*, 54.
44 Bookchin, *Synthetic*, 52-61.
45 Bookchin, *Synthetic*, 200-201.
46 Bookchin, *Synthetic*, 199-200.
47 Bookchin, *Synthetic*, 156.
48 It is reasonable to assume Bookchin had not yet read Thomas Kuhn's *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962), which questioned the neutrality and positivism of science, published in the same year as *Our Synthetic Environment*.
49 Bookchin, *Synthetic*, 220-221.
50 Bookchin, *Synthetic*, 198, 196, 239 and 244 (emphasis added).
51 Bookchin, *Synthetic*, 111 and 120.
52 Bookchin, *Synthetic*, 195-217.
53 Murray Bookchin, *Post-Scarcity Anarchism* (Ramparts Press: San Francisco, 1971), 55-82. The article was originally published in *Ramparts* magazine in February of 1965.
54 Bookchin, *Post-Scarcity*, 83-139.
55 Bookchin, *Post-Scarcity*, 93.

56 Bookchin, *Post-Scarcity*, 167.
57 Bookchin, *Post-Scarcity*, 168.
58 Bookchin, *Post-Scarcity*, 31-54. Part of "Post-Scarcity Anarchism" originally appeared in 1967.
59 Bookchin, *Post-Scarcity*, 171-220. The infighting reached well known proportions of vitriol and rancour, sidetracking many New Left movement activists. Bookchin was no exception; he denounced the "myth of the proletariat" and sharply criticized radical Marxist branches of the Students for Democratic Society (SDS) and others. He found Marxism as dated as imperialism and the crude technology of the nineteenth century, particularly because it did not account for ecological concerns.
60 See John Bellamy Foster, *Marx's Ecology* (New York: Monthly Review Press, 2000), 245-246, for a discussion of why Marxists abandoned ecology from the 1930s to the 1960s. Foster's explanation corresponds to Bookchin's alienation from Marxism and his reasons for it. Furthermore, the Frankfurt School's emphasis upon materialism moved intellectual inquiry away from ecology wherever it existed in Marxism, Foster, viii-ix. In Germany, Alfred Schmidt moved in the opposite direction, attempting to resurrect the ecology of Marxism in *The Concept of Nature in Marx* (London: NLB, 1971), first published in German as *Der Begriff der Natur in der Lehre von Marx* (Frankfurt a.M.: Europäische Verlagsanstalt, 1962).
61 Milazzo, *Unlikely*, 109. He argues she had no tangible impact on use of pesticides nor on Congressional legislation.